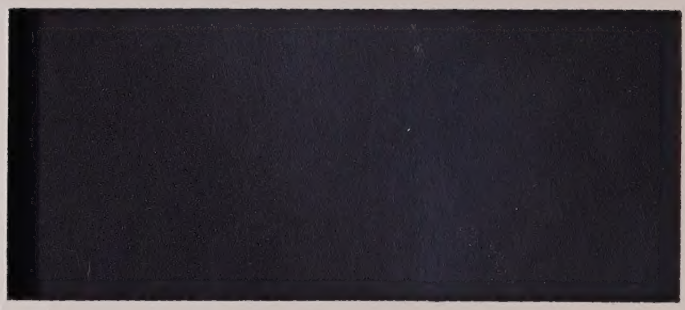
EMR

INSTRUCTION MANUAL

EMR MODEL 222A-03-0999A
RACK ADAPTER

ELECTRO-MECHANICAL RESEARCH, INC. SARASOTA, FLORIDA



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EMR MODEL 222A-03-0999A
RACK ADAPTER

Electro-Mechanical Research, Inc.
Sarasota, Florida

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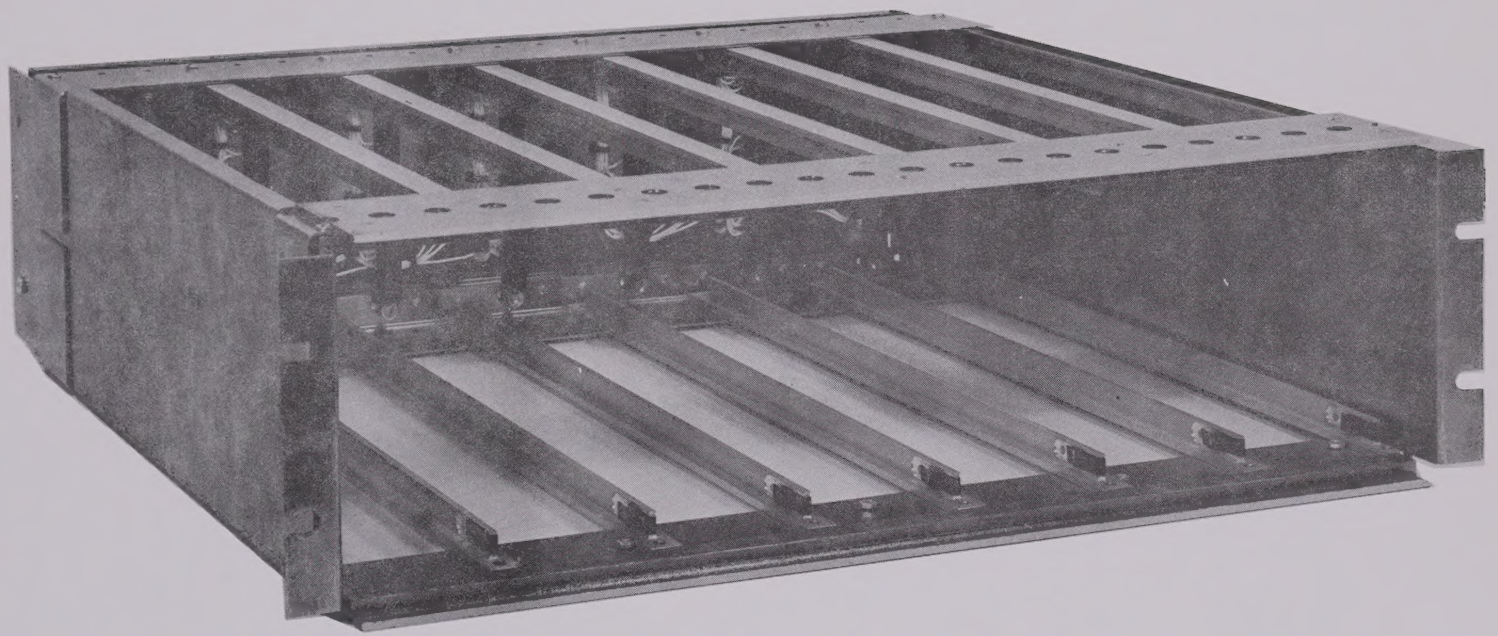


Figure 1-1. Model 222A Rack Adapter

SECTION I
INTRODUCTION

1.1 GENERAL

The Model 222A Rack Adapter, shown in Figure 1-1, is used for mounting the EMR modular equipment in standard 19-inch relay racks. Modular units are inserted or extracted from the front of the rack adapter. Rack wiring is terminated on barrier strips located at the rear of the rack adapter.

1.2 PHYSICAL DESCRIPTION

The Model 222A Rack Adapter uses spot-welded steel construction with modularly spaced extruded-aluminum T-rails to guide equipment into the rack adapter.

The rack adapter requires 5-1/4 inches of panel height in a standard 19-inch relay rack and extends 18 inches behind the panel (exclusive of barrier strips and rack wiring).

Each Model 222A Rack Adapter has the capacity for containing a maximum of 21 modular widths. The modules mount on anodized-aluminum T-rails. The rails are positioned in the top and bottom of the rack adapter as required by the particular installation. The arrangement of modules and the position of the T-rails are shown in the rack adapter assembly drawing located at the back of this manual.

1.3 ELECTRICAL DESCRIPTION

The Model 222A Rack Adapter is wired to accept a particular group of modular equipment. Each unit of modular equipment mates with a connector in the rack adapter as shown in the rack adapter assembly location drawing at the back of this manual. These connectors are wired to four barrier strips located at the rear of the rack adapter.

The function of each terminal of the barrier strips is shown in the external electrical connection drawing located at the back of this manual. Details of the internal rack-adapter wiring are shown in the internal wiring schedule which is also included at the back of this manual.

The barrier strips contain a case-ground lead. This lead does not connect to the rack adapter signal-ground. During installation, the case-ground lead must be connected to signal-ground either at one point in the rack or at one point in the ground station.

SECTION II
INSTALLATION AND OPERATION

2.1 UNPACKING

The Model 222A Rack Adapter is shipped completely wired and ready to be installed in a rack.

2.2 MOUNTING

The Model 222A Rack Adapter shall be installed in a standard 19-inch relay rack. The unit requires 5-1/4 inches of front panel space. The rack adapter flange contains standard mounting holes. Painted end-caps fit under the mounting screws and cover the flanges for neat appearance.

In mobile installations or installations in which the racks will be subjected to the stresses of transportation, additional support should be provided at the rear of the rack adapter. This support can normally be provided by vertical side supports mounted in the rack.

A tag located between the T-rails on the bottom strap of the rack adapter indicates the model number (e.g., 210, 230, etc.) of the unit to be mounted in each position.

To insert modules, align on T-rails and push straight in. To remove modules, grasp the handle at the bottom of the module and lift up until the front panel clears the top of the lower slot. Then pull straight out.

2.3 COOLING

The rack adapter permits unrestricted airflow for cooling. To maintain adequate cooling at least 300 CFM of cool air shall be provided for each kilowatt of power. The power dissipation can be determined from the instruction manuals of the individual modular units.

NOTE

When operating the rack adapter on a bench, elevate to permit proper cooling.

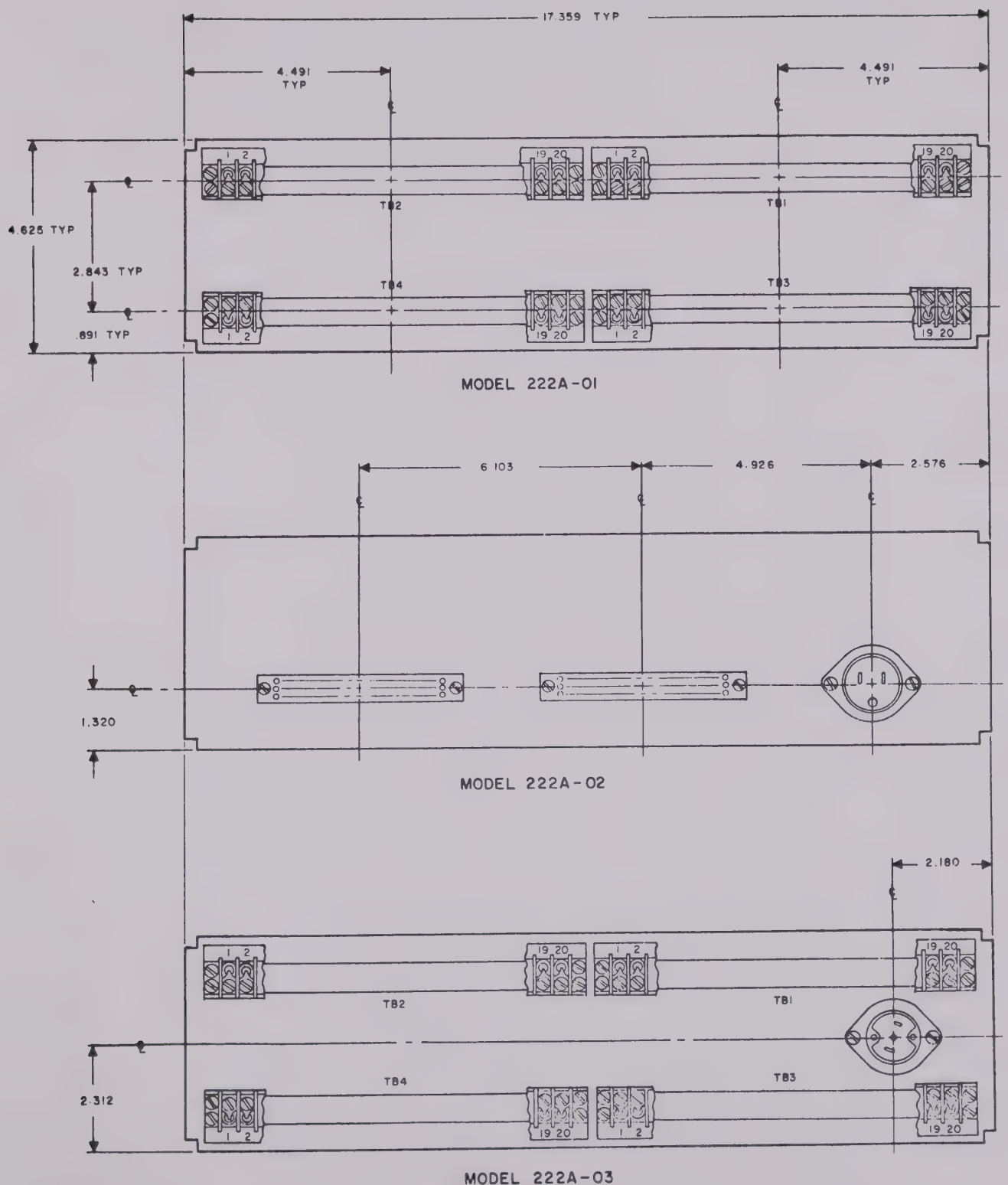
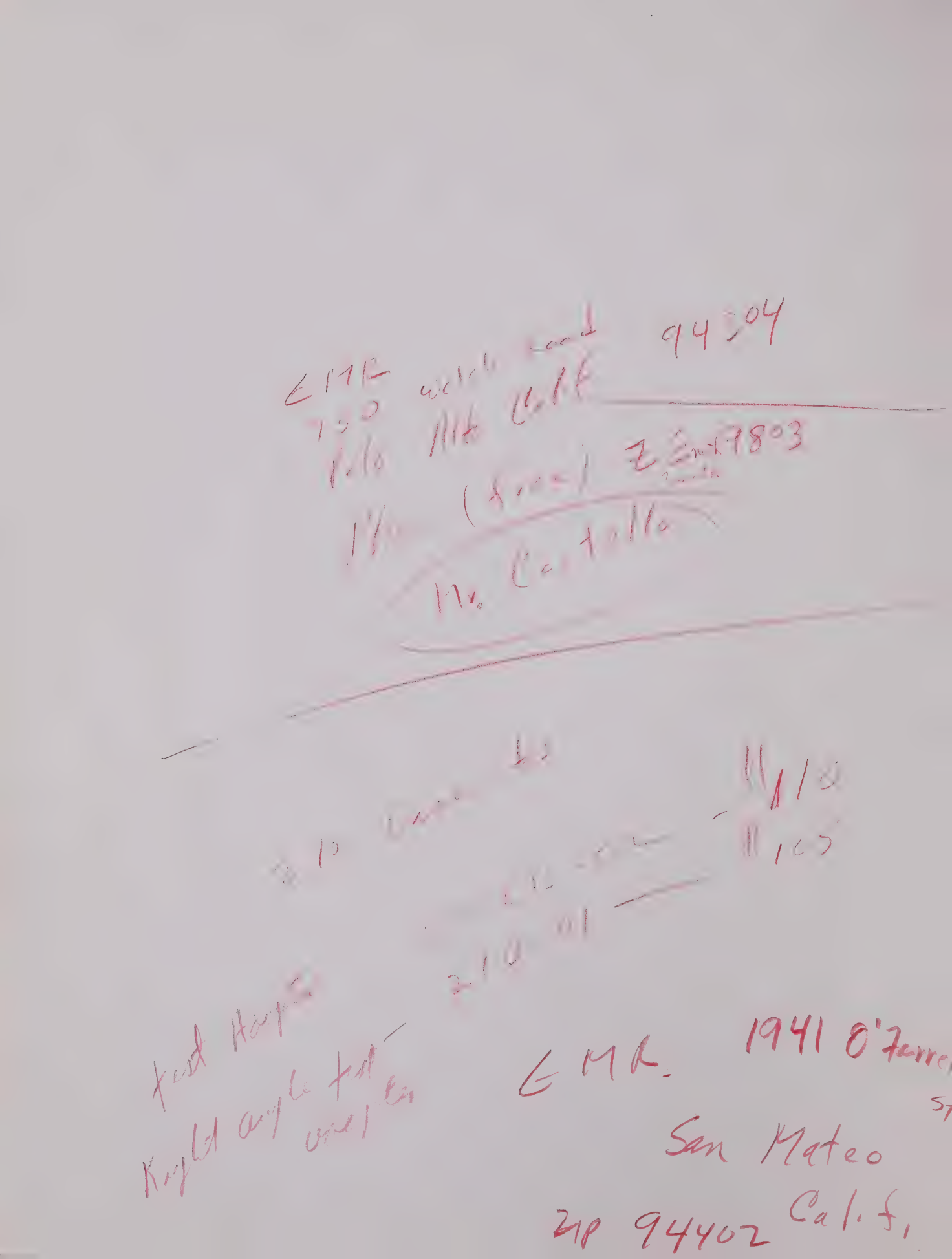


Figure 2-1 Rear Connector Locations

SECTION III
THEORY OF OPERATION

This section is not applicable.



SECTION IV
TROUBLESHOOTING AND MAINTENANCE

4.1 GENERAL

The Model 222A Rack Adapter requires little or no maintenance. Access to the wiring is from the rear of the rack. When the top bolts holding the rear plate are removed, the rear plate pivots on the lower bolts, exposing all internal wiring.

4.2 MODEL 222B-01 TEST ADAPTER

The Model 222B-01 Test Adapter shown in Figure 4-1, permits the servicing of modular units while they are extended from the rack adapter with the equipment energized. The twenty-two pin male connector on the test adapter plugs into any one of the seven (7) connectors on the rack adapter. The female connector plugs into the modular unit being serviced. Test points are provided on the test adapter for each of the terminals on the modular unit.

4.3 MODEL 222B-02 TEST ADAPTER

The Model 222B-02 Test Adapter, shown in Figure 4-2, permits servicing of EMR modular equipment while extended from the Model 222A Rack Adapter. The main chassis, a one-module-width unit (13/16 inch wide) contains a 22-pin male connector which plugs into the desired location of the rack adapter. A cable is routed from the main chassis to a plug chassis which plugs into the modular unit being serviced. Test points are provided on the plug chassis for each of the terminals on the modular unit.

If a two-modular-width or three-modular-width unit is to be serviced, one or two single modular-width adapter chassis can be attached (by means of four clips) to the side of the main chassis, thereby "building" the desired size adapter.

A wiring diagram of the cable between the main chassis and plug chassis is shown in Figure 4-3.

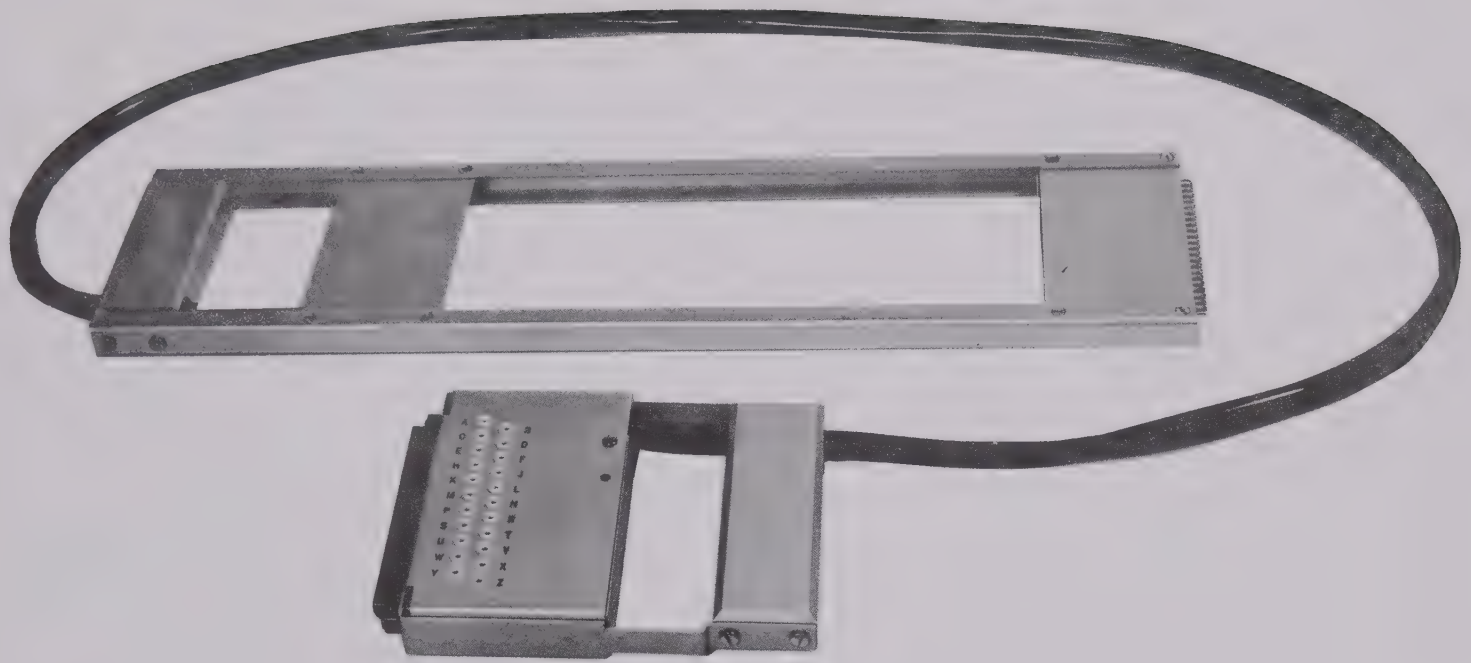
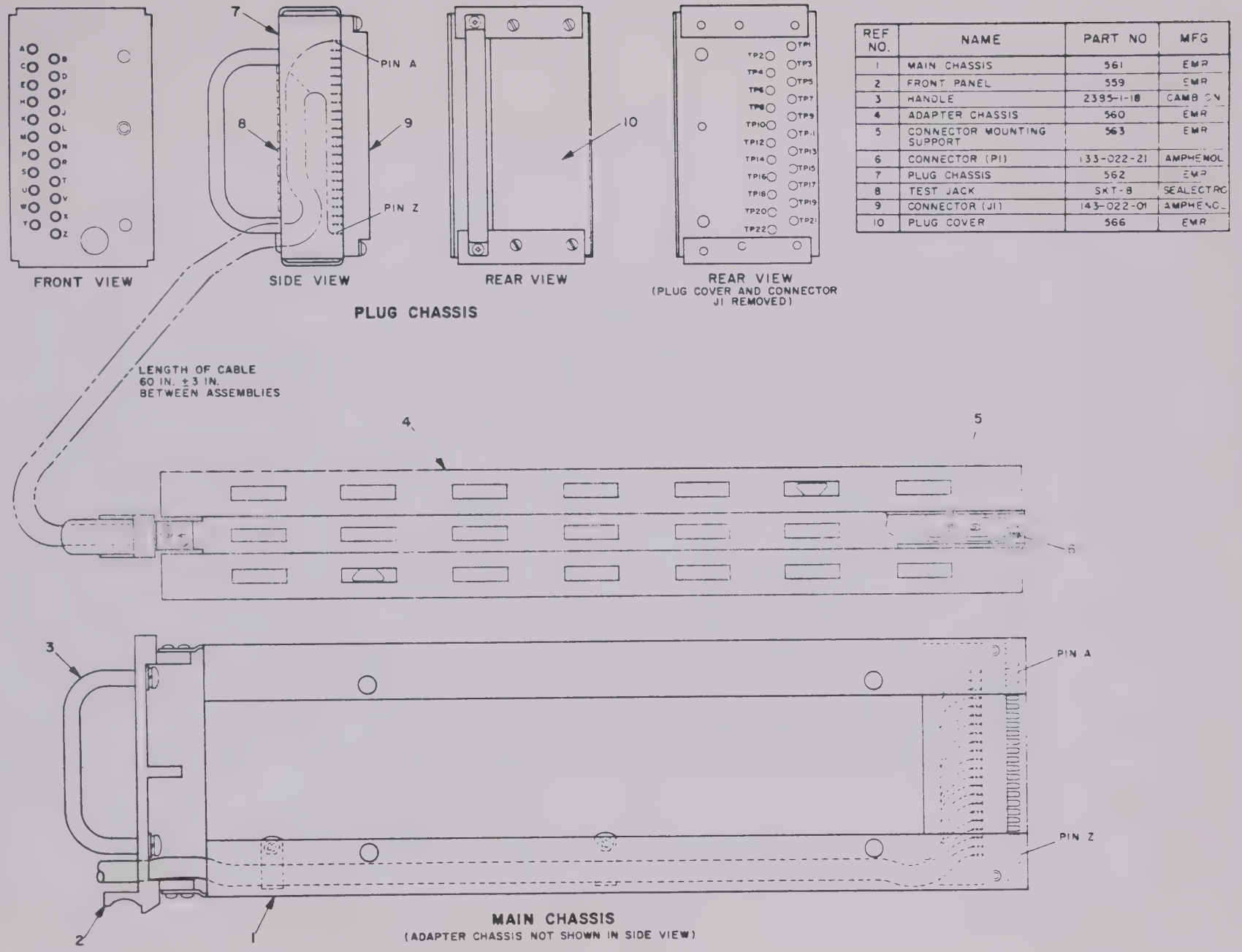


Figure 4-1. Model 222B-01 Test Adapter



REF NO.	NAME	PART NO	MFG
1	MAIN CHASSIS	561	EMR
2	FRONT PANEL	559	EMR
3	HANDLE	2395-1-18	CAMB CN
4	ADAPTER CHASSIS	560	EMR
5	CONNECTOR MOUNTING SUPPORT	563	EMR
6	CONNECTOR (P1)	133-022-21	AMPHENOL
7	PLUG CHASSIS	562	EMR
8	TEST JACK	SKT-8	SEALECTRO
9	CONNECTOR (J1)	143-022-01	AMPHENOL
10	PLUG COVER	566	EMR

Figure 4-2. Model 222B-02 Test Adapter

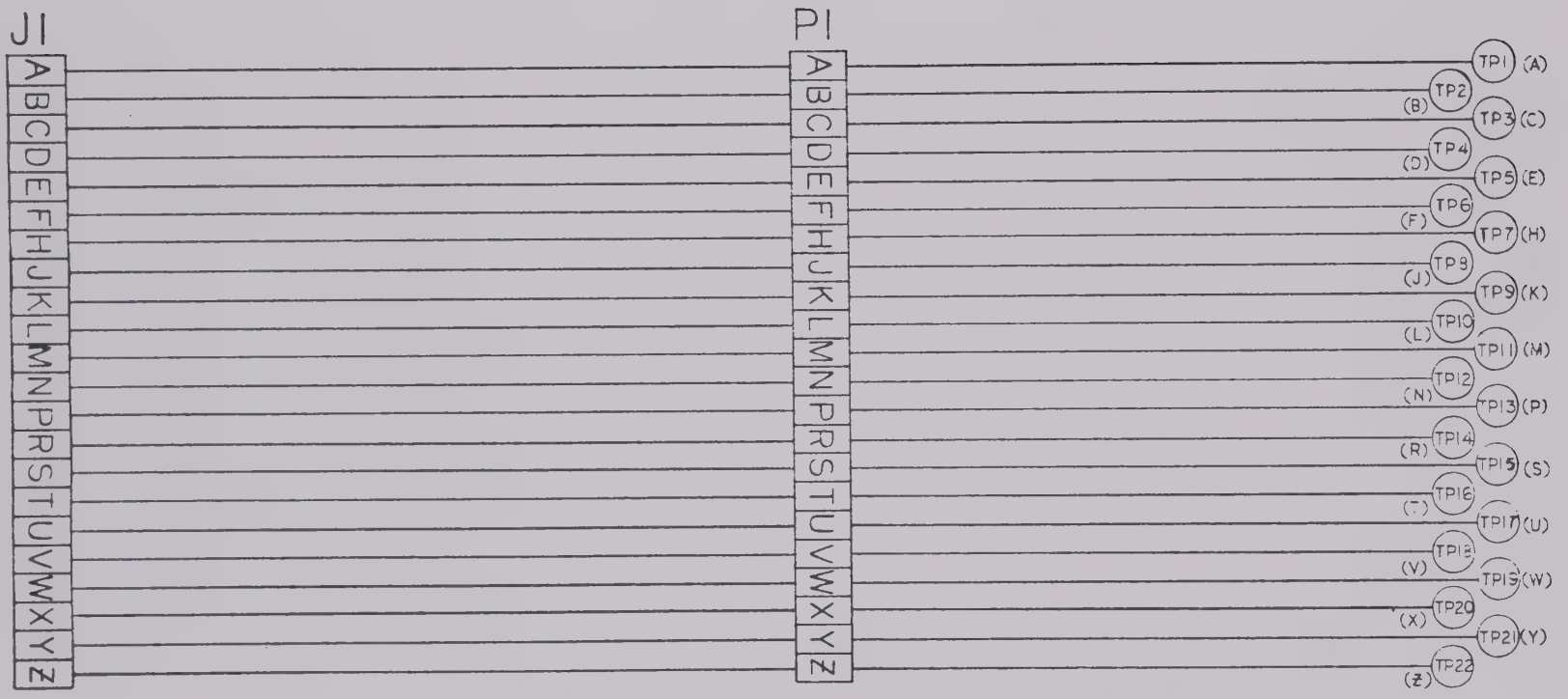
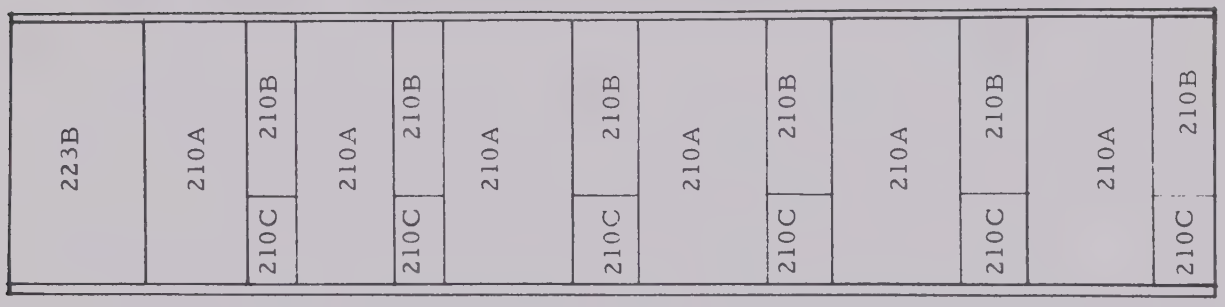
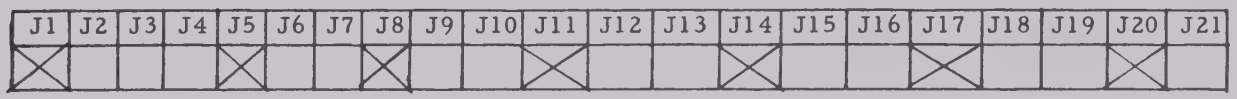


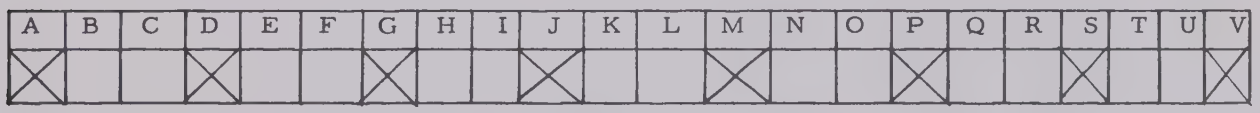
Figure 4-3. Model 222B-02 Test Adapter, Wiring Diagram



RACK ADAPTER LAYOUT



CONNECTOR LOCATIONS

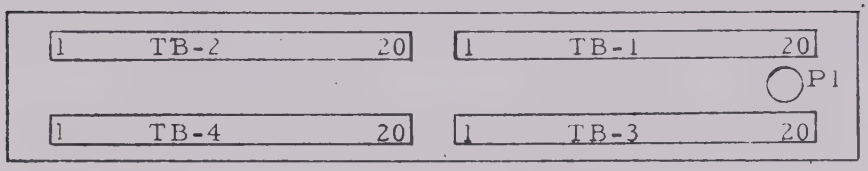


GUIDE RAIL LOCATIONS

Rack Adapter Assembly, Model 222A-03-0999A

MODEL 222A-03

RACK ADAPTER REAR VIEW



TB-1

Pin	Function
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	CASE GROUND

TB-2

Pin	Function
1	DISC#6 TSC INP
2	GRND
3	GRND
4	DISC#5 TSC INP
5	GRND
6	GRND
7	DISC#4 TSC INP
8	GRND
9	GRND
10	DISC#3 TSC INP
11	GRND
12	GRND
13	DISC#2 TSC INP
14	GRND
15	GRND
16	DISC#1 TSC INP
17	GRND
18	GRND
19	SEL INP LEV
20	GRND

TB-3

Pin	Function
1	DISC#3 INP LEV
2	GRND
3	DISC#3 OUTPUT
4	GRND
5	DISC#3 INPUT
6	GRND
7	GRND
8	DISC#2 INP LEV
9	GRND
10	DISC#2 OUTPUT
11	GRND
12	DISC#2 INPUT
13	GRND
14	GRND
15	DISC#1 INP LEV
16	GRND
17	DISC#1 OUTPUT
18	GRND
19	DISC#1 INPUT
20	GRND

TB-4

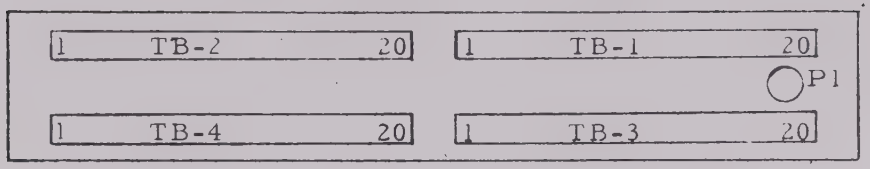
Pin	Function
1	DISC#6 INP LEV
2	GRND
3	DISC#6 OUTPUT
4	GRND
5	DISC#6 INPUT
6	GRND
7	GRND
8	DISC#5 INP LEV
9	GRND
10	DISC#5 OUTPUT
11	GRND
12	DISC#5 INPUT
13	GRND
14	GRND
15	DISC#4 INP LEV
16	GRND
17	DISC#4 OUTPUT
18	GRND
19	DISC#4 INPUT
20	GRND

1	115VAC
2	115VAC
3	Case Ground

External Wiring Connections, Model 222A-03-0999A

MODEL 222A-03

RACK ADAPTER REAR VIEW



TB-1

Pin	Function
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	CASE GROUND

TB-2

Pin	Function
1	DISC#6 TSC INP
2	GRND
3	GRND
4	DISC#5 TSC INP
5	GRND
6	GRND
7	DISC#4 TSC INP
8	GRND
9	GRND
10	DISC#3 TSC INP
11	GRND
12	GRND
13	DISC#2 TSC INP
14	GRND
15	GRND
16	DISC#1 TSC INP
17	GRND
18	GRND
19	SEL INP LEV
20	GRND

TB-3

Pin	Function
1	DISC#3 INP LEV
2	GRND
3	DISC#3 OUTPUT
4	GRND
5	DISC#3 INPUT
6	GRND
7	GRND
8	DISC#2 INP LEV
9	GRND
10	DISC#2 OUTPUT
11	GRND
12	DISC#2 INPUT
13	GRND
14	GRND
15	DISC#1 INP LEV
16	GRND
17	DISC#1 OUTPUT
18	GRND
19	DISC#1 INPUT
20	GRND

TB-4

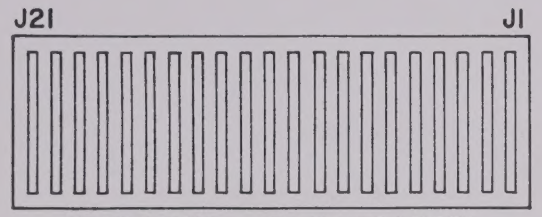
Pin	Function
1	DISC#6 INP LEV
2	GRND
3	DISC#6 OUTPUT
4	GRND
5	DISC#6 INPUT
6	GRND
7	GRND
8	DISC#5 INP LEV
9	GRND
10	DISC#5 OUTPUT
11	GRND
12	DISC#5 INPUT
13	GRND
14	GRND
15	DISC#4 INP LEV
16	GRND
17	DISC#4 OUTPUT
18	GRND
19	DISC#4 INPUT
20	GRND

1	115VAC
2	115VAC
3	Case Ground

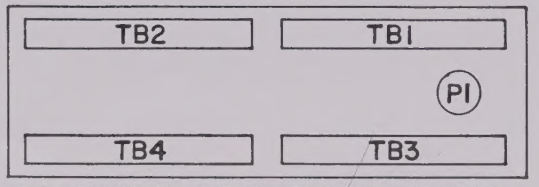
External Wiring Connections, Model 222A-03-0999A

	J21	J20	J19	J18	J17	J16	J15	J14	J13	J12	J11	J10	J9	J8	J7	J6	J5	J4	J3	J2	J1
A		J17A			J14A J20A			J11A J17A			J8A J14A			J5A J11A			J1A J8A				J5A
B		J17B			J14B J20B			J11B J17B			J8B J14B			J5B J11B			J1B J8B				J5B
C																					
D																					
E																					
F		J1M TB4-1			J1L TB4-8			J1K TB4-15			J1J TB3-1			J1H TB3-8			J1F TB3-15				J5F
H																					J8F
J		TB4-3			TB4-10			TB4-17			TB3-3			TB3-10			TB3-17				J11F
K																					J14F
L		TB4-5			TB4-12			TB4-19			TB3-5			TB3-12			TB3-19				J17F
M																					J20F
N		J17N			J14N J20N			J11N J17N			J8N J14N			J5N J11N			J1N J8N			2	J5N TB3-20
P																					
R		TB2-1			TB2-4			TB2-7			TB2-10			TB2-13			TB2-16				TB2-19
S																					
T																					
U																					
V		J17V			J14V J20V			J11V J17V			J8V J14V			J5V J11V			J1V J8V				J5V
W		J17W			J14W J20W			J11W J17W			J8W J14W			J5W J11W			J1W J8W				J5W
X		J17X			J14X J20X			J11X J17X			J8X J14X			J5X J11X			J1X J8X				J5X TB1-20
Y																					P1-1
Z																					P1-2

	TB1	TB2	TB3	TB4
1		J20R	J11F	J20F
2		TB4-2 TB2-3	TB4-20 TB3-4	TB2-2 TB4-4
3		TB2-2 TB2-5	J11J	J20J
4		J17R	TB3-2 TB3-6	TB4-2 TB4-6
5		TB2-3 TB2-6	J11L	J20L
6		TB2-5 TB2-8	TB3-4 TB3-7	TB4-4 TB4-7
7		J14R	TB3-6 TB3-9	TB4-6 TB4-9
8		TB2-6 TB2-9	J8F	J17F
9		TB2-8 TB2-11	TB3-7 TB3-11	TB4-7 TB4-11
10		J11R	J8J	J17J
11		TB2-9 TB2-12	TB3-9 TB3-13	TB4-9 TB4-13
12		TB2-11 TB2-14	J8L	J17L
13		J8R	TB3-11 TB3-14	TB4-11 TB4-14
14		TB2-12 TB2-15	TB3-13 TB3-16	TB4-13 TB4-16
15		TB2-14 TB2-17	J5F	J14F
16		J5R	TB3-14 TB3-18	TB4-14 TB4-18
17		TB2-15 TB2-18	J5J	J14J
18		TB2-17 TB2-20	TB3-16 TB3-20	TB4-16 TB4-20
19		J1R	J5L	J14L
20	J1X P1-3	TB2-18	TB3-18 J1N	TB4-18 TB3-2
	G Gnd Lug			



REAR VIEW — RACK ADAPTER



REAR VIEW—TERM BLOCK CHASSIS

P1	
1	J1Y
2	J1Z
3	TB1-20

Internal Wiring Schedule, Model 222A-03-0999A